comprehends both the medical and specific treatment by serum.

The medical treatment is purely symptomatic. It consists in administering tonics and diffusable stimulants and cold baths whenever the axillary temperature is very high. If one does not have antipest serum, we advise the use of intra-venous injections of collargol, 2½cc. of a 1% solution.

The specific treatment consists in antipest serum therapy. Two antipest serums have been tried in the treatment of plague, the serum of Lustig and the serum of Yersin.

(a) Antitoxic serum of Lustig. We have seen in the chapter on bacteriology the way of making this serum. Galeotti and Polverini have tested its curative virtues for man in the epidemic of Bombay of 1898. The injection was made beneath the skin of a dose of 10 to 20cc. repeated twice the first day and continued on the following days. The total quantity of serum injected into an adult varied from 60 to 80 cc. The mortality in treated individuals in three series covering fifty-nine cases was one per cent.

The monograph of the two Italian authors has been thus summed up by Netter:

The treatment has greatest chance of success when it is commenced early in the disease. The authors have been able to cure three cases of septicemia because they began on the first day. They were never successful in curing the pneumonic form which they consider as absolutely fatal.

(b) Antitoxic and antimicrobic serum of Yersin. Here is an experiment made by Simond in India which proves the efficacy of the serum from a therapeutic viewpoint in the animal most closely approaching man:

"We diluted with 4 cc of sterile bouillon two drops of blood taken from the heart of a rat dead of spontaneous plague, the blood containing the bacilli in pure culture and in great abundance. Immediately afterward they injected this liquid into two large apes of the same species, size and weight. Each received an injection of 2 cc beneath the skin of the thigh. After about twelve hours the two animals presented large right inguinal buboes, intense fever, stupor, difficulty in walking and great feebleness. The symptoms were identical in all respects in both animals. Twelve hours later, that is to say, twenty-four hours after the inoculation, we injected 20 cc of serum into one taken at random. This one changed notably in his condition in the few hours which followed, and the day afterward he took a little food and seemed less depressed while the control was much worse. The latter died sixty-seven hours after inoculation. On the contrary, the ape treated with serum recovered. The fever of this one fell on the fourth day and suppuration of the bubo took place from the sixth to the tenth day."

At the beginning of the use of serum therapy in the treatment of human plague the injection was always made beneath the skin. Calmette and Salimbeni, at Oporto, used for the first time intravenous injections in the treatment of plague pneumonia, which prior to this time had always been considered fatal. Thanks to this energetic method they obtained three cures out of three cases treated. After this, the treatment by intravenous injections was employed in the bubonic form of plague. Vassal, at La Reunion, and Noc, in New Caledonia, made intravenous injections of 40 cc to 60 cc twice daily. The effect of these large doses was the checking of the disease. Vassal inoculated 20 cc in the veins and 40 cc or less beneath the skin the first day. He renewed this double injection 12 hours later if the case was grave. The total quantity of serum used in treating a single patient was as high in one case as 440 cc. In using intravenous injections, care should be taken to avoid the introduction of air in the veins. Here is the method of operation:

One chooses a syringe which will empty itself completely and a flask of clear serum. If the serum is clouded it should not be used until after filtration through antiseptic cotton. The serum should be heated to about 37°, the syringe filled and freed from any bubbles of air which it may contain. After having sterilized the selected region (fold of the groin, back of the hand or malleoar region) one applies at the base of the member a constricting bandage to cause the vein which is to be injected to fill with blood. One lifts the skin with the left hand and with the right forces the point of the needle of the syringe into the vein. The blood flowing out drop by drop shows that one is well within the vessel. One then fits the beak of the charged syringe upon the free end of the needle and makes the injection slowly. In four or five minutes one may release the bandage slightly. To be sure that one has not injected a bubble of air one does not empty the syringe entirely. The needle is removed and a little collodion applied.

The hypodermic injection is made in the right or left flank. One has no advantage over the other except as it be near the glands.

The results obtained are very variable. This variability is dependent on many factors, the antitoxic power of the serum, racial peculiarities and early or late intervention. Yersin, in his first trials in China, had magnificent results in antipest serum therapy. Twenty-one cures out of twenty-two cases. Later, in India, the statistics were less favorable, the mortality being 49%. At La Reunion, Vassal obtained the following results:

Mortality in 38 cases treated with serum, 8%.

Mortality in 80 cases not treated with serum, 30%.

To apply the serum therapy in a methodical way the blood should be examined once or twice daily for plague bacilli and to ascertain the leukocyte reaction. Noc, in New Caledonia, remarked that after each injection of serum there was a diminution of bacilli in the blood and an increase in the polynuclear leukocytes.

All the authors who have used antipest serum therapy insist on the importance of early intervention. The following table was drawn up by Yersin after his trial of serum therapy in Bombay in 1897:

Patients inoculated first day, mortality....12%
Patients inoculated second day, mortality..35%
Patients inoculated third day, mortality....50%
Patients inoculated fourth day, mortality..66%

The rule of antipest serum therapy may be expressed in a few words: act quickly and energetically. Quickly, that is to say, in the shortest possible time after the beginning of the disease. Energetically, that is to say, by intravenous and subcutaneous injections.

It is well to warn the patient that the serum sometimes produces skin eruptions, which are harmless. This precaution should be taken prior to the injection of antipest serum into healthy patients. During the quarantine of the "Senegal," such results of serum vaccination produced considerable anxiety among the passengers who had not been previously warned of the possibility of a skin eruption.

A GLANCE OVER THE DEVELOPMENT OF THE TECHNIC OF MODERN GYNECOLOGICAL OPERATIONS.*

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While glancing over the development of gynecology I became especially interested in finding out the various steps gynecological treatment has taken. Forty years ago the work of the gynecologist was

*Author's abstract of paper read before the American Genecological Society in Philadelphia.

limited to medical and orthopedic applications to the vulva, vagina and collum uteri. One was timid about entering the uterine cavity, but after Simpson and E. Martin had made the decision of the narrowed os uteri and after the employment of the ecraseur of Chassaignac a step forward was noted. About this time too Atlee, Peaslee, Spencer Wells, Baker, Brown, Koeberle and Keith had met with good results from laparotomy for abdominal neoplasms. Marion Sims, Gustav Simon and Hegar were among the first to lay bare the vaginal vault and inaugurate the plastic work on the collum and vagina. Emmet's trachelorrhaphy and the successful fistula operations of Simon and Bozeman were triumphs of this time. Intrauterine treatment was now improved by the use of sponge tents in dilating the cervix and opening up the uterine cavity to the curette and medical applications.

Next abdominal surgery advanced. We operated not only upon neoplasmata, but upon inflammatory tissue. Lawson, Tait, Hegar and I proved at that time the possibility of satisfactory results from abdominal section in cases of oophoritis and salpingitis. At the time we also learned that many of these supposed inflammatory masses were due to ectopic location of a fertilized ovum. Meanwhile W. A. Freund had by a combination of abdominal and vaginal methods operated upon cancer of the uterus. The method being enlarged so as to include pelvic tissues and retroperitoneal glands is to-day the typical carcinoma operation. Freund's advance gave impetus to extirpate the carcinomatous uterus by the vaginal route. Czerny, Billroth and Schroeder led the way. While this has been more or less dropped, a step was taken, for we learned to separate the uterus vaginally in case of non-malignant disease, to operate on the adnexa, and even to preserve them after removal of diseased parts, this being the beginning of conservative operations in gynecology.

About this time, too, another step was taken in treating deviations of the uterus through the vaginal route, and the ideas of Saenger and Olshausen have opened up a wide field of operative work for utero-fixation. Later the Alexander-Adams operation began to supersede ventral fixation, and Duehrssen showed at the beginning of the last decade that there was a safe vaginal route of exploring the true pelvis and its organs. It seemed for a time that abdominal operations would be limited to large tumors, but soon a reaction set in, at least so far as extrauterine pregnancy and inflamed adnexa were concerned. To-day enthusiasm for vaginal operation has subsided.

The advances in gynecology were greatly helped by the increased knowledge of pathological anatomy and the ability to differentiate the processes before a tumor distended the abdomen, or the entire pelvis was blocked by diseased organs. Following Karl Ruge we now diagnose disease from microscopical examinations, biochemical tests, and culture and inoculations, but we dare not forget that there is yet here much field for exploration. Of course, the replacing of asepsis for antisepsis has been of great help in this advance, and we all honor Holmes, Seimmelweiss, Pasteur, Koch and Lister.

To-day sufficient up-to-date material is at hand to study not only primary results of operations, but also whether the results of such operations be permanent or not. After such critical examination we must admit that even though the vaginal method so far as localized processes go leaves little to be desired, laparotomy claims preference.

The mortality from opening the peritoneal cavity has been lessened from the vigorous stand against septic infection. It is being universally attempted to shorten operative procedures and expose the peritoneum as little as possible, and to lessen the deleterious effects of narcosis; but we yet have to deal with the stretching of the scar and ventral hernia. Primary union and not stretching the wound has much reduced this, yet where drainage is called for this sometimes can't be omitted. Another danger even after healing is the adhesions of the intestines and omentum to the abdominal incision and tumor stump. No means is at present at hand to prevent them for neither the careful handling of the peritoneum, nor the attempts to prevent this process by oily substances or salt solution, nor the early action of motus peristalticus counteracts these complications to any satisfactory extent. They will be a constant danger in laparotomy at all events, more so than in vaginal operation. Of course, the pelvic organs are not insured against similar adhesions, but my own extensive experience teaches me they are hereby very much less frequent. Certainly the vaginal operation requires a special training, but the advantages gained are a sufficient return for the pains, and even more when we consider that patients get upon their feet again quite as soon as after a normal birth, earlier than after the most simple laparotomy.

The vaginal operation can only be considered for a limited field in gynecological affections, but no one is entitled to say that tumors of the uterus or ovaries should only be approached by this method so long as they are in the true pelvis. I do not know of such a limitation. The boundary does not depend on the true pelvis, but upon whether the tumor is freely movable. Even small tumors firmly fixed should not be attacked by the vaginal route. On the other hand, larger tumors can be attacked, if movable, and by morcellation or puncture have their size reduced. Sometimes adhesions can be separated, but usually I consider them as a counter-indication.

The treatment of acute inflammatory affections of the tubes and ovaries has also changed during the last few years. We now recognize that gonorrheal infection starts in an acute attack. Under proper treatment healing takes place and may be so complete that full functional activity is regained, and dried pus, thickenings and calloseties indicate beyond question that serious processes do at least become quiescent. These observations compel us most earnestly to consider whether it is right to remove these inflamed organs as long as there is no immediate danger to life. In fact patients do recover without operation in spite of gonorrhea, tuberculosis, puerperal fever and septic infections.

ALAMEDA COUNTY.

The regular meeting for July was held on the 21st and called to order by the president, who introduced Dr. Charles G. Levison, of San Francisco.

Dr. Levison, before operating, reviewed the subject of local analgesia. He stated "that while Schleich deserved all credit for popularizing infiltration anesthesia, it must not be forgotten, however, that Reclus is the originator of this method. Schleich's position in local analgesia is due to the fact that he first advocated the use of the very weak solution of cocain. It was in 1886 that Reclus first advocated infiltrating the skin, and at this time and for years subsequently, he employed cocain in a one-half per cent solution without any mishap, using as much as 20 centigrams at one sitting. He claimed that the danger in the use of cocain hypodermically lay in the employment of strong solutions, not in the amount of the drug used.

Reclus claims that a few drops of a two per cent solution of cocain are much more dangerous than the employment of a much larger quantity of a one-half per cent solution. Reclus also insists that the patients are to be kept in a recumbent posture for one